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## CHAPTER 7 — PROTECTING ANIMAL HEALTH

### Introduction

Influenza viruses that cause severe disease outbreaks in animals, especially birds, are believed to be a likely source for the emergence of a human pandemic influenza virus. The avian influenza type A “H5N1” virus currently found in parts of Asia, Europe, and Africa is one of particular concern due to its demonstrated ability to infect both birds and mammals, including humans. Whether or not this H5N1 virus develops the ability to transmit efficiently between humans and cause a human pandemic, there will inevitably be other influenza viruses in animals that will pose such a threat in the future.

Most influenza viruses found in birds and other animals do not pose any threat to humans, but a few may have the potential to become a human pandemic strain and must be eradicated or otherwise controlled when they occur. Although there is no definitive way to identify all influenza viruses in animals that may have human pandemic potential, such potential could be evidenced by the ability of a virus that infects birds or other animals to also cause illness in humans or to cause illness in both birds and other animals.

Influenza viruses that cause severe illness and death in birds or other animals are known as “highly pathogenic” for the species in which that illness occurs. Some avian influenza viruses, such as the H5N1 in Asia, Europe, and Africa, cause high mortality in chickens and are referred to as highly pathogenic avian influenza (HPAI) viruses. Such avian viruses are generally of the H5 or H7 type, although not all H5 and H7 viruses are highly pathogenic for chickens. However, all H5 and H7 types have the potential to mutate into a highly pathogenic strain. In order to protect poultry and other birds in the United States, and also minimize or eliminate the possibility that a human pandemic strain might emerge from such viruses, all HPAI viruses or other H5 or H7 avian influenza viruses that infect domestic poultry in the United States will be eradicated or otherwise controlled. Because H5 and H7 types are not the only influenza A viruses that may have the potential to emerge as a human pandemic strain, other type A influenza viruses in animals that show evidence of human pandemic potential will also be eradicated or otherwise controlled.

Until a human pandemic influenza virus emerges, there is no way to know whether that virus will be able to infect and be transmitted by birds or other animals, or if it will “only” be transmissible from human-to-human. While it is possible that a human pandemic strain of influenza virus could infect and be transmitted by birds or other animals, it is probably unlikely.<sup>18</sup> In any case, if a human pandemic strain emerges, it will be very important to confirm through experimental and epidemiologic studies whether or not the virus can also infect, and be transmitted by, birds or other animals, so that any measures needed to mitigate the threat to humans and the impacts on poultry or other animals can be implemented.

A human pandemic influenza virus could emerge outside the United States or within our borders. Because of the potential for the HPAI H5N1 virus to become a pandemic strain, many international animal health initiatives are currently underway through the U.S. Agency for International Development

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<sup>18</sup>It cannot be known what specific characteristics a human pandemic influenza virus will possess, but the virus will have to be able to efficiently bind to the receptors of, and replicate in, human respiratory cells, in order to be transmitted efficiently from human-to-human. Such a virus would not likely also

be able to efficiently bind to cell receptors and replicate efficiently in avian hosts, due to differences in receptor specificity and other species-specific factors. A slightly greater, but still low, likelihood may exist for a virus adapted to humans to also replicate in swine.

and the International Partnership on Avian and Pandemic Influenza to assist affected countries with control of the current outbreak. Many more international activities are planned (see Chapter 4 - International Efforts). The more that can be done through these efforts to address fundamental issues related to the detection and control of viruses with pandemic potential in birds or other animals, the lower the risk will be for the emergence of a human pandemic strain.

Regardless of where the risk for emergence exists, we must be prepared to respond appropriately. If an influenza virus with human pandemic potential is introduced into domestic birds or other animals in the United States, despite all international efforts to prevent it, we must detect and eradicate the virus as quickly as possible. If it is found in wild birds, efforts will be directed at preventing introduction into domestic birds or other susceptible animals, rather than eradication.

## Key Considerations

The Department of Agriculture (USDA) has a history of success in working with Federal partners, State, local, and tribal entities, and the poultry industry to eradicate avian influenza viruses, including HPAI and H5 or H7 viruses with the potential to become HPAI, that have been introduced into U.S. poultry. Significant outbreaks of HPAI or potential HPAI in poultry were eradicated in 1984 and 2002, as was a smaller outbreak in 2004.

Although such eradication efforts may help to protect human health, they can result in significant costs due to poultry production losses from bird depopulation activities and from quarantine or other movement restrictions placed on birds. But eradication of these viruses also protects the production of U.S. poultry, worth almost \$29 billion in 2004, including broiler production worth more than \$20 billion. The United States is the second largest exporter of poultry meat in the world and our trading partners are not only concerned about HPAI, but also increasingly wary of importing poultry or poultry products from any country that may have avian influenza viruses with the potential to become highly pathogenic.

The economic consequences of an HPAI outbreak in the United States would depend on its size, location, and type, and on the amount of time necessary to eradicate the outbreak. Production losses would depend on the proximity of the outbreak to major poultry areas, but with limited backyard flocks and strong biosecurity in large facilities, any outbreak would likely be contained with only modest production losses. The most economically significant recent outbreak of avian influenza in the United States occurred in 1983 and 1984, primarily in Pennsylvania and Virginia. That outbreak affected mainly layer flocks and resulted in the depopulation of 17 million birds and destruction of 14 million eggs. While the amount of birds and eggs destroyed was small relative to total annual U.S. production, the loss of breeder and laying flocks had a greater impact than implied by the destruction of the birds and eggs since they represent future production. Losses were estimated at \$65 million.

Unlike domestic birds, wild bird species are highly dispersed, highly mobile, and occupy a wide range of native habitats. These characteristics render any effort to eradicate avian influenza in wild bird populations impractical. The Department of the Interior (DOI), which is responsible for managing wild migratory birds under Federal law and international treaty, works closely with State wildlife agencies, other Federal agencies, and partners to conserve wild migratory bird populations through the management of habitats, regulation of sport hunting, and other management actions. The DOI maintains an intensive research and data management capability that allows it to track the movement of birds during the migration season, identify migratory stopover sites, and inform its partners of migratory bird arrivals.

USDA and DOI share the responsibility for managing the consequences of wildlife disease. USDA has the lead role in preventing the introduction of disease from wildlife to domestic birds and conducts a broad range of disease research, surveillance, and management activities associated with this role. DOI has the lead role in managing healthy wildlife populations for the benefit of the American public and conducts comprehensive field and laboratory wildlife disease investigations and disease research with emphasis on the ecology of disease and its impact on wild populations, surveillance, and management. The USDA and DOI programs complement one another such that the full range of management needs resulting from wildlife disease is addressed. Should H5N1 or any other HPAI virus be detected in wild birds, the departments will work together on a unified response, to include conducting additional surveillance of wild birds and recommending biosecurity measures to prevent interactions between domestic and wild birds.

### **Response Planning**

To respond effectively to an introduction of influenza in birds or other animals in the United States, Federal and State/tribal-level response plans and resources must be in place. Once in place, plans should regularly be updated at the Federal, State, tribal, and animal industry sector levels, and exercised among those levels. Emergency management roles must be clearly defined and understood at all levels. The *National Response Plan* (NRP) and the National Incident Management System (NIMS) provide a response structure, but response plans for disease outbreaks in animals must be exercised between all levels so that roles and functions are clearly understood prior to a response.

### **Communicating and Mitigating Risks**

There will be a need for timely and clear communication about the risks associated with the introduction of influenza and how to mitigate them, especially at the level of the individual producer or animal owner. Significant misconceptions may exist about risks, and accurate and open communication will be crucial in correcting any misconceptions. Owners and producers of birds or other animals at risk for influenza must understand their critical role in protecting those animals from infection and in reporting any illness that may indicate the presence of a pathogenic influenza virus. Similarly, State and tribal wildlife management authorities must understand their roles in identifying and reporting illness in wild animals that may presage the emergence of highly pathogenic influenza.

USDA currently conducts a multilevel outreach and education campaign called “Biosecurity for the Birds” to provide disease and biosecurity information to poultry producers, especially those with “backyard” production. The information provides guidance to bird owners and producers on preventing introduction of disease and mitigating spread of disease should it be introduced. The campaign also encourages producers to report sick birds, thereby increasing surveillance opportunities for avian influenza.

Animal industry groups should develop industry-specific standards for biosecurity and plans for outbreak response. Standards and plans should be as specific as required to deal with a highly contagious disease like influenza, but in particular need to address issues related to the zoonotic potential of an influenza outbreak. Response plans also need to help ensure successful eradication of the disease, yet preserve as much continuity of normal animal production activities as possible before, during, and after the outbreak. This kind of planning will require collaboration with Federal, State, local, and tribal entities to address issues that might otherwise negatively impact animal production during a disease response.

DOI conducts outreach to Federal, State, and tribal wildlife authorities, and the public through a multifaceted program of technical products related to wildlife disease. Through a series of bulletins, websites,

and other means, the DOI alerts and advises those who may come into contact with infected wildlife. Using this advice, State and tribal wildlife agencies should develop specific standards for biosecurity and plans for outbreak response. These plans need to address conditions specific to wildlife populations.

Animal outbreaks caused by influenza viruses with human pandemic potential, including those known to cause human illness, present challenges for preparedness and response due to the zoonotic potential of such viruses and the resulting risk for infection and illness in persons exposed to infected animals, carcasses, or animal waste. Mitigation of these risks requires specific planning, including working with public health and occupational health and safety professionals to determine requirements for personal protective equipment (PPE), seasonal influenza vaccination, and/or antiviral prophylaxis for personnel performing response functions with potential exposure to virus. Plans also need to address the logistical requirements for providing the necessary worker protection and the safe disposal of animal carcasses and animal waste.

### **Resources for a Response**

Potentially large quantities of response materiel will need to be distributed expeditiously and accurately. As prescribed in Homeland Security Presidential Directive 9, USDA has established a National Veterinary Stockpile (NVS) that can be rapidly distributed in the event of an animal disease outbreak. The NVS has a variety of materiel that would be necessary for a response to an influenza outbreak, including PPE, disinfectant, diagnostic reagents, and antiviral medication (for responders). In addition to the NVS materiel, there are currently 40 million doses of avian influenza vaccine available for use in poultry, should an outbreak occur. Half these doses are for an H5 virus and half are for an H7 virus. However, in the event of a large scale outbreak of avian influenza, additional stockpiles of avian influenza vaccine may be needed. In addition to vaccines, there will be a need for diagnostic reagents, equipment, and other materiel to be available for rapid deployment to the site(s) of an influenza outbreak in animals, especially in poultry or other birds.

### **Research and Development**

Perhaps even more important than having the planning, communication, and response resources in place, is ensuring that we have the scientific knowledge and tools necessary to detect and respond to an influenza outbreak in animals. Research and development will play a vital role in our preparedness to protect animals against influenza infection, detect infections when they occur, and respond effectively to influenza outbreaks caused by viruses with human pandemic potential. Enhancement of our knowledge of the ecology of influenza viruses, viral evolution, novel influenza strains that emerge in animals, and the determinants of virulence of influenza viruses in animal populations is essential. Better tools are needed for detection of influenza viruses in the environment, for providing immunity to avian populations, and for validating disease response strategies. All of this will require an appropriate infrastructure for animal health research and development. Most critically, there must be an adequate amount of laboratory research space that meets biosafety requirements appropriate for conducting animal studies using an influenza virus with pandemic potential. Deficiencies in research facility capacity will limit development of science-based solutions for the prevention, management, and control or eradication of influenza in animal populations.

### **Rapid Detection**

Although a human influenza pandemic may emerge outside the United States, early detection of influenza viruses with pandemic potential in animals within the United States is critical to minimizing

the chances of a human pandemic strain emerging here. A robust surveillance system in domestic animals and wildlife is required to ensure detection. Such surveillance of animals needs to integrate with human influenza surveillance activities at a national level. It is important for results of animal surveillance to serve as an input that may help target human surveillance efforts, relative to temporal, geographic, or other risk factors, especially if an influenza virus with human pandemic potential is detected in birds or other animals in the United States.

An extensive amount of influenza surveillance is currently conducted in poultry and wild birds in the United States. Commercial poultry operations are monitored for avian influenza through the National Poultry Improvement Plan (NPIP), and birds moving through the U.S. live bird marketing system (LBMS) are also tested for avian influenza. Wild birds are examined for avian influenza viruses through efforts involving the DOI, USDA, State wildlife authorities, and universities. Surveys of waterfowl and shore birds have been conducted in Alaska since 1998 looking for the presence of avian influenza viruses. Diagnostic testing of samples from these domestic and wild birds is carried out by many Federal, State, university, and private laboratories, including DOI's National Wildlife Health Center (NWHC) and USDA's National Veterinary Services Laboratories (NVSL) and Southeast Poultry Research Laboratory.

In addition to surveillance performed specifically to detect avian influenza in domestic and wild birds, the USDA employs specially trained wildlife disease biologists to survey for wildlife diseases and respond to disease outbreaks through its National Wildlife Disease Surveillance and Emergency Response System. This system ensures support to existing programs with appropriate sample collection, information exchange, and additional laboratory infrastructure. The USDA and State animal health authorities also employ specially trained veterinarians, called foreign animal disease diagnosticians, to investigate suspected cases of exotic disease in poultry and other influenza-susceptible species that are reported from USDA-accredited veterinary practitioners and from animal owners. Veterinary practitioners also submit specimens from sick birds and other influenza-susceptible species to State and university veterinary diagnostic laboratories, almost 40 of which have the capability to perform a rapid screening test for HPAI viruses as part of the National Animal Health Laboratory Network (NAHLN), a cooperative effort between USDA and the American Association of Veterinary Laboratory Diagnosticians.

Although substantial surveillance activities are already in place in the United States to detect avian influenza viruses with human pandemic potential in domestic poultry, enhancing surveillance in domestic animals (including at slaughter and processing) and wildlife will help ensure that reporting of these events will occur as early as possible. Animal populations that are most critical for additional surveillance activities are poultry and wild birds, not only in terms of increased numbers tested but also in the geographic distribution of testing to increase the probability of detection. In particular, domestic birds moving through the LBMS, farmed waterfowl and game birds, and migratory waterfowl and shore birds are important targets for increased avian influenza testing. Concomitant with increased targeting for animal sampling is the need for an increased capability to perform the necessary diagnostic testing to detect influenza viruses in those samples. Specifically, there is a need to enhance the capabilities of diagnostic laboratories participating in avian influenza surveillance of wild birds, and of commercial birds in the LBMS and in the NPIP, to be equivalent to those of laboratories in the NAHLN.

To fully utilize data collected as part of the national surveillance for influenza viruses with pandemic potential in animal populations, capabilities for capturing, analyzing, and sharing data must be in place. A database is needed to provide a means for evaluating the types of surveillance that should be conducted in the future, where the surveillance is needed, and the numbers of samples that must be collected. Such a database will also facilitate sharing of critical information with other animal health and

public health partners working to detect influenza viruses, especially those viruses that may have human pandemic potential.

### **Coordinated Response**

Detection of an outbreak of avian or other influenza virus with human pandemic potential in an animal population in the United States will demand a rapid and coordinated response by Federal, State, and tribal entities, industry partners, and other stakeholders. Initially there will be a State, local, and/or tribal response supported by USDA (for domestic animals) or both USDA and DOI (for wildlife). If the scope of the outbreak is beyond the immediate resource capabilities of USDA/DOI and the animal health officials in an affected State or tribal entity, USDA can implement an integrated Federal, State, tribal, and local response utilizing all necessary Federal resources under the NRP and Emergency Support Function #11 - Agriculture and Natural Resources (ESF #11). USDA is the coordinator of ESF #11 for an animal disease response, with DOI serving as the primary agency responsible for issues related to the protection of natural and cultural resources, including wildlife, endangered species, and migratory birds. Because of the general zoonotic potential of influenza outbreaks in birds or other animals, USDA will work closely with the Department of Health and Human Services (HHS), the coordinator of Emergency Support Function #8 - Public Health and Medical Services (ESF #8). Outbreaks known to have both human and animal infections will be investigated jointly by public health authorities, including HHS, and animal health authorities, including USDA, that will then work together to implement appropriate response strategies.

The response will be organized using the Incident Command System as prescribed by the NIMS. Depending on the circumstances of the outbreak and the animal population involved, the Secretary of Agriculture may declare an “extraordinary emergency” to enhance the response authorities of the USDA. If necessary, USDA would make a request to the Department of Homeland Security (DHS) for declaration of an Incident of National Significance that would invoke the full support of NRP coordination mechanisms. If the outbreak becomes extremely large, there will be a need to utilize all potential sources of support. To meet the demand for skilled responders, it may be necessary to have licensed veterinary practitioners cross jurisdictional boundaries, either State or national, to assist in the response. These boundaries can present barriers to veterinarians wishing to work as responders in any jurisdiction where they are not already licensed to practice.

### **Goals**

Overall, the goals for protecting animals against influenza viruses with human pandemic potential (or against a human pandemic virus, should it be able to infect animals) include: developing new capabilities in influenza preparedness, prevention, detection, and response; planning and preparedness for response to an outbreak; detecting influenza infections in animals, especially poultry and wild birds; and eradicating or controlling influenza outbreaks in animals that present a risk to human or animal health.

## Roles and Responsibilities

The responsibility for preparing for, detecting, and responding to influenza infections in birds or other animals, domestic or wild, is shared by everyone associated with the animals at risk. This includes animal owners, animal industry groups, State, local, and tribal wildlife management and animal health authorities, and the Federal Government. All these individuals and entities have important and interdependent roles in animal health-related activities.

### The Federal Government

The Federal Government will use all capabilities within its authority to support the private sector and State, local, and tribal animal health authorities in preparedness, surveillance, and response activities related to animal disease outbreaks. It will increase readiness to sustain essential Federal animal health functions during a human pandemic and provide animal health support services under the NRP.

Department of Agriculture: USDA is responsible for protecting American livestock, including poultry, from exotic or foreign animal diseases, such as HPAI. It advises individuals, the private sector, and State, local, and tribal entities, on appropriate biosecurity measures both before and after a disease is introduced, and helps to develop, support, and carry out surveillance for disease agents of concern. USDA provides diagnostic reference services and primary testing support, both prior to an outbreak and during an outbreak response. USDA stockpiles vaccines for possible use in a response to an outbreak of influenza with human pandemic potential in animals, and sponsors research on influenza viruses with pandemic potential and on vaccines that might be effective in controlling them. It provides assistance to the private sector and State, local, and tribal entities, in the development of influenza preparedness and response plans. Under the NRP, DHS has overall incident management coordination responsibilities and USDA will be the coordinator for ESF #11 for the response to a highly contagious disease like influenza, implementing an integrated national-level response with industry, State, local, and tribal responders. It provides response personnel, materiel, technical expertise, and funding for certain disease control and eradication activities. USDA is also responsible for providing Federal leadership to Federal, State, and tribal entities in managing problems caused by nuisance wildlife, including native wildlife, invasive species, and exotic animals. USDA partners with the DOI and others to coordinate the Federal Government's surveillance strategy for the early detection of HPAI in wild migratory birds and other wildlife when appropriate. USDA administers a National Wildlife Disease Surveillance and Emergency Response Program that is responsible for conducting daily surveillance on wildlife diseases, such as HPAI, and responding to a variety of emergencies including natural disasters and disease outbreaks. USDA also inspects and monitors meat, poultry, and egg products sold in interstate and foreign commerce to ensure products for public consumption are inspected for signs of disease.

Department of the Interior: DOI is responsible for managing and protecting certain wildlife, including migratory birds, under various laws and treaties and for protecting public health on more than 500 million acres of Federal land across the country. DOI coordinates the Federal Government's surveillance of wild migratory birds for the presence of HPAI virus, coordinates Federal surveillance with related surveillance activities of State, fish, and wildlife agencies, and provides leadership and support in the area of wildlife disease research and diagnostics to Federal and State natural resource agencies. DOI's NWHC works with department bureaus, as well as State, tribal, and other Federal entities, on wildlife disease investigations, providing the best available science and technical support for issues related to wildlife health and disease. This biosafety level 3 laboratory is actively involved in targeted surveillance of migratory birds and shorebirds, as well as wildlife morbidity and mortality event investigations to identify

causative agents of wildlife disease. In the event of an HPAI outbreak in wild migratory birds, DOI will work with Federal and State natural resource, agricultural health, and public health agencies to support timely and effective response.

Department of Health and Human Services: HHS's primary responsibilities are those actions required to protect the health of all Americans, including communication of information related to pandemic influenza, leading international and domestic efforts in surveillance and detection of influenza outbreaks, ensuring the provision of essential human services, implementing measures to limit spread, and providing recommendations related to the use, distribution, and allocation of countermeasures and to the provision of care in mass casualty settings. HHS supports research, education, and prevention projects addressing the Nation's pressing agricultural health and safety problems, evaluating agricultural injury and disease prevention, and developing and evaluating control technologies to prevent illness and injuries among agricultural workers and their families. Through its Centers for Agricultural Disease and Injury Research, Education, and Prevention program, HHS supports consultation and/or training to researchers, health and safety professionals, graduate/professional students, and agricultural extension agents and others in a position to improve the health and safety of agricultural workers.

Department of Homeland Security: While DHS has overall incident management coordination responsibilities, it is also a support agency to USDA under ESF #11 - Agriculture and National Resources. Under this annex, DHS may provide additional support in interdicting adulterated products in transport and at ports of entry; subject-matter expertise and technical assistance (e.g., Customs and Border Protection Agricultural Specialists); and air and transport services (e.g., U.S. Coast Guard), as needed, for personnel and laboratory samples. DHS's Homeland Security Operations Center will also receive updates from USDA. In the event of a zoonotic disease outbreak, DHS will coordinate with USDA and HHS to release public information.

Department of Defense: In the event that an animal health emergency exceeds the capability of civil authorities, the Department of Defense (DOD) may provide defense support of civil authorities in accordance with the NRP and appropriate DOD Directives, as well as other procedures and authorities that exist for requesting assistance from DOD. If authorized by the Secretary of Defense, DOD can provide personnel, equipment, facilities, materials, and pharmaceuticals to the extent that national security readiness is not compromised. USDA may request and receive support from DOD in the event that the presence of animal/plant diseases and/or pests, endemic or exotic, constitutes an actual or potential emergency. For the purposes of this plan, an emergency is defined as any sudden negative economic impact, either perceived or real, such as a "foreign animal disease" event or a natural disaster that threatens the viability of U.S. animal agriculture and thereby the food supply of the United States.

### **State, Local, and Tribal Entities**

State, local, and tribal entities are primarily responsible for detecting and responding to disease outbreaks and implementing measures to minimize the consequences of an outbreak. State, local, and tribal entities should have preparedness plans that address key issues in dealing with a disease outbreak in animals. They will be the first line of defense in limiting the spread of disease. Appropriate movement controls for susceptible birds or other animals and their products, and the ability to implement those controls, will be essential. For that purpose, there may be a need to integrate State, local, and tribal law enforcement entities into an animal disease response plan. Reporting mechanisms for use in early identification of suspect cases of influenza in animal populations should be established, as should mechanisms for communicating with the local animal agriculture community about influenza and response activities.

## **The Private Sector and Critical Infrastructure Entities**

The private sector plays an integral role in preparedness for, and successful response to, an animal disease outbreak. Animal industry groups should develop standards for biosecurity and plans for outbreak response that help ensure successful eradication of the disease yet preserve as much continuity of normal animal production activities as possible during the outbreak.

## **Individuals and Families**

Animal owners should practice appropriate biosecurity to prevent or minimize the risk of disease introduction prior to an outbreak, and must comply with quarantines or other movement restrictions to prevent or minimize the spread of disease during an outbreak.

## **Actions and Expectations**

### **7.1. Pillar One: Preparedness and Communication**

To help ensure that response plans can be successfully implemented, a capability must exist to rapidly provide personnel for response activities and surge capacity for veterinary diagnostic laboratories. If an influenza outbreak occurs in animals, owners and producers of susceptible animals, as well as natural resource managers, must understand their role, and the role of Federal, State, and tribal entities, in responding to an influenza outbreak in domestic animals or wildlife and limiting spread of the disease. Stockpiled materiel and vaccines need to be increased, and additional research and development is essential, including simulation modeling to refine disease mitigation strategies.

#### ***a. Planning for a Pandemic***

##### **7.1.1. Support the development and exercising of avian and pandemic response plans.**

7.1.1.1. USDA, in coordination with DHS, HHS, DOD, and DOI, and in partnership with State and tribal entities, animal industry groups, and (as appropriate) the animal health authorities of Canada and Mexico, shall establish and exercise animal influenza response plans within 6 months. Measure of performance: plans in place at specified Federal agencies and exercised in collaboration with States believed to be at highest risk for an introduction into animals of an influenza virus with human pandemic potential.

##### **7.1.2. Continue to work with States, localities, and tribal entities to develop medical and veterinary surge capacity plans.**

7.1.2.1. USDA shall partner with State and tribal entities to establish, organize, train, and exercise incident management teams and a veterinary reserve corps within 12 months. Measure of performance: a veterinary reserve corps and incident management teams trained for each of the States believed to be at highest risk for an introduction into an animal population of an influenza virus with human pandemic potential.

7.1.2.2. USDA, in coordination with DOD, HHS, DHS, and DOI, shall partner with States and tribal entities to ensure sufficient veterinary diagnostic laboratory

surge capacity for response to an outbreak of avian or other influenza virus with human pandemic potential, within 6 months. Measure of performance: plans and necessary agreements to meet laboratory capacity needs for a worst case scenario influenza outbreak in animals validated by utilization in exercises.

***b. Communicating Expectations and Responsibilities***

**7.1.3. Provide guidance and support to poultry, swine, and related industries on their role in responding to an outbreak of avian influenza, including ensuring the protection of animal workers and initiating or strengthening public education campaigns to minimize the risks of infection from animal products.**

7.1.3.1. USDA, in coordination with DHS, shall develop, disseminate, and encourage adoption of best practices and recommendations for maintaining the biosecurity of animals, especially poultry and swine, against infection and spread of influenza viruses and for reporting suspected cases of influenza with human pandemic potential in animals to State or Federal authorities, within 4 months. Measure of performance: incorporation of best practices by industry.

7.1.3.2. USDA, in coordination with DHS, shall partner with State and tribal entities, and industry groups representing poultry and swine producers and processors, and other stakeholders, to define and exercise response roles and capabilities within 9 months. Measure of performance: exercises involving State or tribal entities, at least one poultry industry group, and one swine industry group, conducted and after action reports produced.

7.1.3.3. HHS, in coordination with USDA, DHS, and the Department of Labor (DOL), shall work with the poultry and swine industries to provide information regarding strategies to prevent avian and swine influenza infection among animal workers and producers, within 6 months. Measure of performance: guidelines developed and disseminated to poultry and swine industries.

7.1.3.4. USDA, in coordination with DOI, shall collaborate with DHS and other Federal partners, with State, local, and tribal partners, including State wildlife authorities, and with industry groups and other stakeholders, to develop guidelines to reduce the risk of transmission between domestic animals and wildlife during an animal influenza outbreak, within 6 months. Measure of performance: guidelines for various outbreak scenarios produced, disseminated, and incorporated by partners.

7.1.3.5. DOI, in coordination with USDA, shall work with other Federal, State, and tribal partners to develop appropriate response strategies for use in the event of an outbreak in wild birds, within 4 months. Measure of performance: coordinated response strategies in place that can rapidly be tailored to a specific outbreak scenario.

***c. Producing and Stockpiling Vaccines, Antiviral Medications, and Medical Material***

**7.1.4. Expand the domestic supply of avian influenza vaccine to control a domestic outbreak of avian influenza in bird populations.**

- 7.1.4.1. USDA shall augment the current stockpile of 40 million doses of avian influenza vaccine with an additional 70 million doses within 9 months. Measure of performance: avian influenza vaccine stockpiles increased to 110 million doses.
- 7.1.4.2. USDA shall stockpile diagnostic reagents, PPE, antiviral medication for protection of response personnel, and other response materiel within 9 months. Measure of performance: materiel pre-positioned for rapid delivery to areas where poultry or other animals are believed to be at highest risk for an introduction of an influenza virus with human pandemic potential.

***d. Advancing Scientific Knowledge and Accelerating Development***

**7.1.5. Ensure that there is maximal sharing of scientific information about influenza viruses between governments, scientific entities, and the private sector.**

- 7.1.5.1. USDA and DOI shall perform research to understand better how avian influenza viruses circulate and are transmitted in nature, in order to improve information on biosecurity distributed to local animal owners, producers, processors, markets, auctions, wholesalers, distributors, retailers, and dealers, as well as wildlife management agencies, rehabilitators, and zoos, within 18 months. Measure of performance: completed research studies provide new information, or validate current information, on the most useful biosecurity measures to be taken to effectively prevent introduction, and limit or prevent spread, of avian influenza viruses in domestic and captive animal populations.
- 7.1.5.2. USDA and DOI shall perform research to develop and validate tools that will facilitate environmental surveillance for avian influenza viruses, especially in wild birds, through the evaluation of feathers, feces, water, or nesting material, within 24 months. Measure of performance: new environmental surveillance tools researched and made available for use by Federal, State, tribal, university, and other entities performing avian influenza surveillance.
- 7.1.5.3. USDA shall sequence genomes of all available avian influenza viruses to provide diagnostic sequences, identify possible vaccine antigens, and provide potential information on viral evolution, relationships, and determinants of virulence within 12 months. Measure of performance: genomes of avian influenza viruses sequenced and submitted to GenBank, and information reported on potential diagnostic sequences and viral relationships.
- 7.1.5.4. USDA shall perform research to improve vaccines and mass immunization techniques for use against influenza in domestic birds within 36 months. Measure of performance: an effective avian influenza vaccine that can be delivered simultaneously to multiple birds ready for commercial development.
- 7.1.5.5. USDA, in coordination with DHS, shall identify any deficiencies relative to needs for Federal animal research facility capacity, including appropriate biosafety levels, for performing studies of avian, swine, and other animal influenza viruses with pandemic potential, and establish a plan of action to ensure that needed facilities will be available to carry out those studies, within 6 months. Measure

of performance: deficiencies in capacity of Federal animal research facilities identified and plans developed for addressing those needs.

- 7.1.5.6. USDA, in coordination with DHS, DOI, and DOD, shall partner with State and tribal authorities to refine disease mitigation strategies for avian influenza in poultry or other animals through outbreak simulation modeling, within 6 months. Measure of performance: simulation models produced and reports issued on the results of influenza outbreak scenario modeling.

## **7.2. Pillar Two: Surveillance and Detection**

Even with the large amount of surveillance and significant diagnostic capabilities currently targeted at detecting avian influenza, additional actions need to be taken to help ensure rapid detection of influenza in birds or other animals, bolster our diagnostic capabilities, and improve our ability to analyze and share surveillance data.

### ***a. Ensuring Rapid Reporting of Outbreaks***

#### **7.2.1. Expand our domestic livestock and wildlife surveillance activities to ensure early warning of the spread of an outbreak to our shores.**

- 7.2.1.1. DOI and USDA shall collaborate with State wildlife agencies, universities, and others to increase surveillance of wild birds, particularly migratory water birds and shore birds, in Alaska and other appropriate locations elsewhere in the United States and its territories, to detect influenza viruses with pandemic potential, including HPAI H5N1, and establish baseline data for wild birds, within 12 months. Measure of performance: reports detailing geographically appropriate wild bird samples collected and influenza virus testing results.
- 7.2.1.2. USDA and DOI shall collaborate to develop and distribute information to State and tribal entities on the detection, identification, and reporting of influenza viruses in wild bird populations, within 6 months. Measure of performance: information distributed and a report available describing the type, amount, and audiences for the information.
- 7.2.1.3. USDA shall work with State and tribal entities, and industry groups, to perform surveys of game birds and waterfowl raised in captivity, and implement surveillance of birds at auctions, swap meets, flea markets, and public exhibitions, within 12 months. Measure of performance: samples collected at 50 percent of the largest auctions, swap meets, flea markets, and public exhibitions held in at least five States or tribal entities believed to be at highest risk for an avian influenza introduction.
- 7.2.1.4. USDA shall work with State and tribal entities to provide additional personnel in additional locations to increase the number of facilities inspected and number of samples collected for avian influenza virus testing within the LBMS, within 12 months. Measure of performance: number of facilities inspected and sampled increased by 50 percent compared to previous year.

**7.2.2. Support the development and sustainment of sufficient U.S. and host nation laboratory capacity and diagnostic reagents in affected regions and domestically, to provide rapid confirmation of cases in animals or humans.**

- 7.2.2.1. USDA shall increase the capacity of the NVSL and the NAHLN to process influenza surveillance samples from commercial and LBMS sources, as well as wild birds, and develop and contract for the production of test reagents for distribution at no cost to collaborating State and industry laboratories within 12 months. Measure of performance: national capacity for laboratory testing increased by 100 percent compared to previous year and contracts for production of required avian influenza test reagents in place.
- 7.2.2.2. USDA shall partner with State and tribal entities to provide additional support for laboratory activities associated with NPIP surveillance for avian influenza within 12 months. Measure of performance: cooperative support agreements with States and tribal entities developed and implemented.
- 7.2.2.3. DOI and USDA shall increase the wild bird testing capacity of the NWHC and the National Wildlife Research Center, respectively, to process avian influenza samples from wild birds, within 12 months. Measure of performance: national wild bird testing capacity for avian influenza virus increased by 50 percent compared to previous year.

***b. Using Surveillance to Limit Spread***

**7.2.3. Expand and enhance mechanisms for screening and monitoring animals that may harbor viruses with pandemic potential.**

- 7.2.3.1. USDA shall develop an integrated database, or enhance existing databases, to support the national initiative for comprehensive surveillance for influenza viruses with pandemic potential in domestic animals using data collected from multiple sources, within 12 months. Measure of performance: functioning animal influenza surveillance database producing reports for a variety of queries and supporting multiple analyses of data.
- 7.2.3.2. DOI, in coordination with USDA, shall work with State and tribal entities, universities, and others to implement the Avian Influenza Data Clearinghouse developed by the NWHC to support the integrated surveillance program for influenza in wild birds within 12 months. Measure of performance: a functional wild bird influenza data clearinghouse utilized by multiple stakeholders.

**7.3. Pillar Three: Response and Containment**

If an outbreak of influenza occurs in birds or other animals in the United States it will be necessary to respond rapidly and in a coordinated manner with Federal, State, and tribal officials, industry partners, natural resource managers, and other stakeholders. The capability to utilize all possible Federal sources of wildlife management and veterinary response surge capacities will need to be in place. In order to prevent the outbreak from spreading, the movements of susceptible species of domestic animals and their products must be controlled or halted in the outbreak

“control area.” During an outbreak it will be essential to implement an effective communication strategy to keep stakeholders and the public informed of response activities and to clearly elucidate and put into perspective the risks and hazards that may exist and how to mitigate them.

***a. Containing Outbreaks***

**7.3.1. Provide guidance for States, localities, and industry on best practices to prevent the spread of avian influenza in commercial, domestic, and wild birds, and other animals.**

- 7.3.1.1. USDA, in coordination with DHS, HHS, DOI, and the Environmental Protection Agency, shall partner with State and tribal entities, animal industries, individual animal owners, and other affected stakeholders to eradicate any influenza outbreak in commercial or other domestic birds or domestic animals caused by a virus that has the potential to become a human pandemic strain, and to safely dispose of animal carcasses. Measure of performance: at least one incident management team from USDA on site within 24 hours of detection of such an outbreak.
- 7.3.1.2. USDA shall coordinate with DHS and other Federal, State, local, and tribal officials, animal industry, and other affected stakeholders during an outbreak in commercial or other domestic birds and animals to apply and enforce appropriate movement controls on animals and animal products to limit or prevent spread of influenza virus. Measure of performance: initial movement controls in place within 24 hours of detection of an outbreak.
- 7.3.1.3. USDA shall be prepared to provide near real-time technical information and policy guidance for State and tribal entities, animal industries, and individuals, on best practices to prevent the spread of avian influenza in commercial and other domestic birds and animals during an outbreak, within 4 months. Measure of performance: information and guidance distributed within 72 hours of confirmed outbreak and report available describing type and amount of information, and audiences to whom delivered.
- 7.3.1.4. DOI shall coordinate with Federal, State, local, and tribal officials to identify and apply appropriate measures to limit the spread of influenza virus should an outbreak occur in free-ranging wildlife populations. Measure of performance: initial control measures implemented within 24 hours of detection of an outbreak in free-ranging wildlife.

***b. Leveraging National Medical and Public Health Surge Capacity***

**7.3.2. Activate plans to distribute medical countermeasures, including non-medical equipment and other material, from the Strategic National Stockpile and other distribution centers to Federal, State, and local authorities.**

- 7.3.2.1. USDA shall activate plans to distribute veterinary medical countermeasures and materiel from the NVS to Federal, State, local, and tribal influenza outbreak responders within 24 hours of confirmation of an outbreak in animals of

influenza with human pandemic potential, within 9 months. Measure of performance: NVS materiel distributed within 24 hours of confirmation of an outbreak.

**7.3.3. Address barriers to flow of public health, medical, and veterinary personnel across State and local jurisdictions to meet local shortfalls in public health, medical, and veterinary capacity.**

7.3.3.1. USDA, in coordination with DOS, shall partner with appropriate international, Federal, State, and tribal authorities, and with veterinary medical associations, including the American Veterinary Medical Association, to reduce barriers that inhibit veterinary personnel from crossing State or national boundaries to work in an animal influenza outbreak response, within 9 months. Measure of performance: agreements or other arrangements in place to facilitate movement of veterinary practitioners across jurisdictional boundaries.

**7.3.4. Determine the spectrum of public health, medical, and veterinary surge capacity activities that the U.S. military and other government entities may be able to support during a pandemic, contingent upon primary mission requirements, and develop mechanisms to activate them.**

7.3.4.1. USDA shall assess the outbreak response surge capacity activities that other Federal partners, including the DOD, may be able to support during an outbreak of influenza in animals and ensure that mechanisms are in place to request such support, within 6 months. Measure of performance: written assessment completed and all necessary activation mechanisms in place.

***c. Ensuring Effective Risk Communication***

**7.3.5. Work with State and local governments to develop guidelines to assure the public of the safety of the food supply and mitigate the risk of exposure from wildlife.**

7.3.5.1. USDA, in coordination with DHS, DOI, and HHS, shall work with State, local, and tribal partners, industry groups, and other stakeholders to develop, clear and coordinated pre-scripted public messages that can later be tailored to the specifics of a given outbreak and delivered by trained spokespersons, within 3 months. Measure of performance: appropriate informational and risk mitigation messages developed prior to an outbreak, then shared with the public within 24 hours of an outbreak.

7.3.5.2. USDA and HHS, in coordination with DHS, State, local, and tribal partners, industry groups, and other stakeholders, shall develop guidelines to assure the public of the safety of the food supply during an outbreak of influenza in animals, within 6 months. Measure of performance: guidelines for various outbreak scenarios produced and shared with partners; within first 24 hours of an outbreak, appropriately updated guidelines on food safety shared with the public.

- 7.3.5.3. USDA, in coordination with DOI, shall collaborate in working with Federal partners, with State, local, and tribal partners, including State wildlife authorities, and with industry groups and other stakeholders, to update and distribute guidelines to reduce the risk of transmission between domestic animals and wildlife and reduce the risk of spread to other wildlife species during an animal influenza outbreak. Measure of performance: guidelines updated and shared with the public within first 24 hours of an outbreak.